

REMARKS

Claims 1-11 are pending in the present application. In the Office Action, claims 1-11 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Adams (U.S. Patent No. 5,362,585). The Examiner's rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. Third, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. A recent Federal Circuit case emphasizes that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory

statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

With regard to independent claim 1, Applicants describe and claim forming a layer of photoresist above a process layer formed above a first semiconducting substrate and determining a position of a top surface of the layer of photoresist. For example, Applicants describe, and claim in claim 2, sensing a thickness of a layer of photoresist 23 using a metrology tool 38 capable of sensing or measuring such a thickness. See Patent Application, page 14, ll. 7-8 and Figure 2. Applicants further describe and claim positioning a focal plane of a light source adjacent the layer of photoresist based upon the determined position of the top surface and energizing the light source.

In contrast, Adams describes an apparatus 29 utilized to measure the intensity of light scattered from an interface between an exposed portion of photoresist 33 and an unexposed portion of photoresist 31. See Adams, col. 6, ll. 20-24. Adams describes determining a gradient of a photoactive compound using one or more measured intensities of the scattered light and then determining focus values based upon the determined gradient. See Adams, col. 9, ll. 20 - col. 10, ll. 42. For example, Adams describes determining a "machine focus," by creating a plurality of subfield arrays 51 including individual feature clumps 61. The stepper focus is changed slightly by a known amount to create each of the feature clumps 61. See Adams, col. 7, ll. 13-20 and Figure 3. The images in the feature clumps 61, such as the latent images 185, are then interrogated using a beam and the maximum intensity of the fraction of the scattered light that reaches a detector 187 is measured. Additional feature groups 82 within the feature clump 61 are then interrogated and the maximum intensity of the fraction of the scattered light is measured for each feature group 82. Then, each of the values obtained for the signal strength, *i.e.* the

maximum intensity, is least-squares-fitted against its corresponding focus and a maximal value of the signal strength is determined. The focus values corresponding to the maximal value, or an average of maximal values obtained for different feature groups 82 and/or clumps 61, may be chosen as the machine focus. See Adams, col. 9, ll. 25 - col. 10, ll. 41 and Figure 6.

However, as admitted by the Examiner item 3 on page 3 of the Office Action, Adams does not teach or suggest determining a position of a top surface of the layer of photoresist or positioning a focal plane of a light source adjacent the layer of photoresist based upon the determined position. Moreover, Adams is directed to determining a gradient of a photoactive compound and therefore provides no suggestion or motivation to modify Adams to arrive at Applicants' claimed invention. *i.e.* determining a position of a top surface of the layer of photoresist or positioning a focal plane of a light source adjacent the layer of photoresist based upon the determined position.

Despite acknowledging this deficiency in Adams, the Examiner nevertheless alleges that the present invention is obvious over Adams. To support this allegation, the Examiner states that it is clear that many of parameters determined within the metes and bounds of the reference clearly require determination of the surface of the photoresist. In particular, the Examiner alleges that the focal plane and the location of the top surface of the photoresist layer are determined by the method described by Adams. Applicants respectfully disagree for the following reasons. As discussed above, Adams describes selecting a machine focus based upon the intensities the light scattered from a plurality of feature groups 82 and/or clumps 61. The machine focus described in Adams is an independent reference focus that does not necessarily require determination of the focal plane or determination of the top surface of the layer of photoresist. Furthermore, Adams states that deviations from machine focus may occur in actual wafer processing, so the machine

focus described in Adams does not necessarily correspond to the situation in which the focal plane is adjacent the top surface of the photoresist layer. See Adams, col. 6, ll. 37-57.

For at least the aforementioned reasons, Applicants respectfully submit that the prior art does not disclose each and every element of the claimed invention and that Examiner's conclusory statements do not support a finding of obviousness in the present case. As stated above, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Thus, Applicants respectfully submit that claims 1-11 are not obvious over Adams and request that the Examiner's rejections be withdrawn.

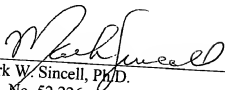
In the Office Action, the Examiner agreed that claim 12 is a linking claim and indicated that where claims 1-11 are held to be patentable, claim 12 would be entitled to rejoinder if all claim limitations as set forth in the process claims are specifically shown in the means claim 12. Applicants respectfully submit that all claim limitations as set forth in the process claims are also set forth in the means claim 12 and, in light of the above arguments, claim 12 is now entitled to rejoinder. Furthermore, Applicants respectfully submit that claims 13-24 include all the limitations of the allowable linking claim 12. Thus, claims 13-24 are entitled to rejoinder. See MPEP, §809.

For the aforementioned reasons, it is respectfully submitted that claims 1-24 of the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Date: _____

6/11/03

Respectfully submitted,



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